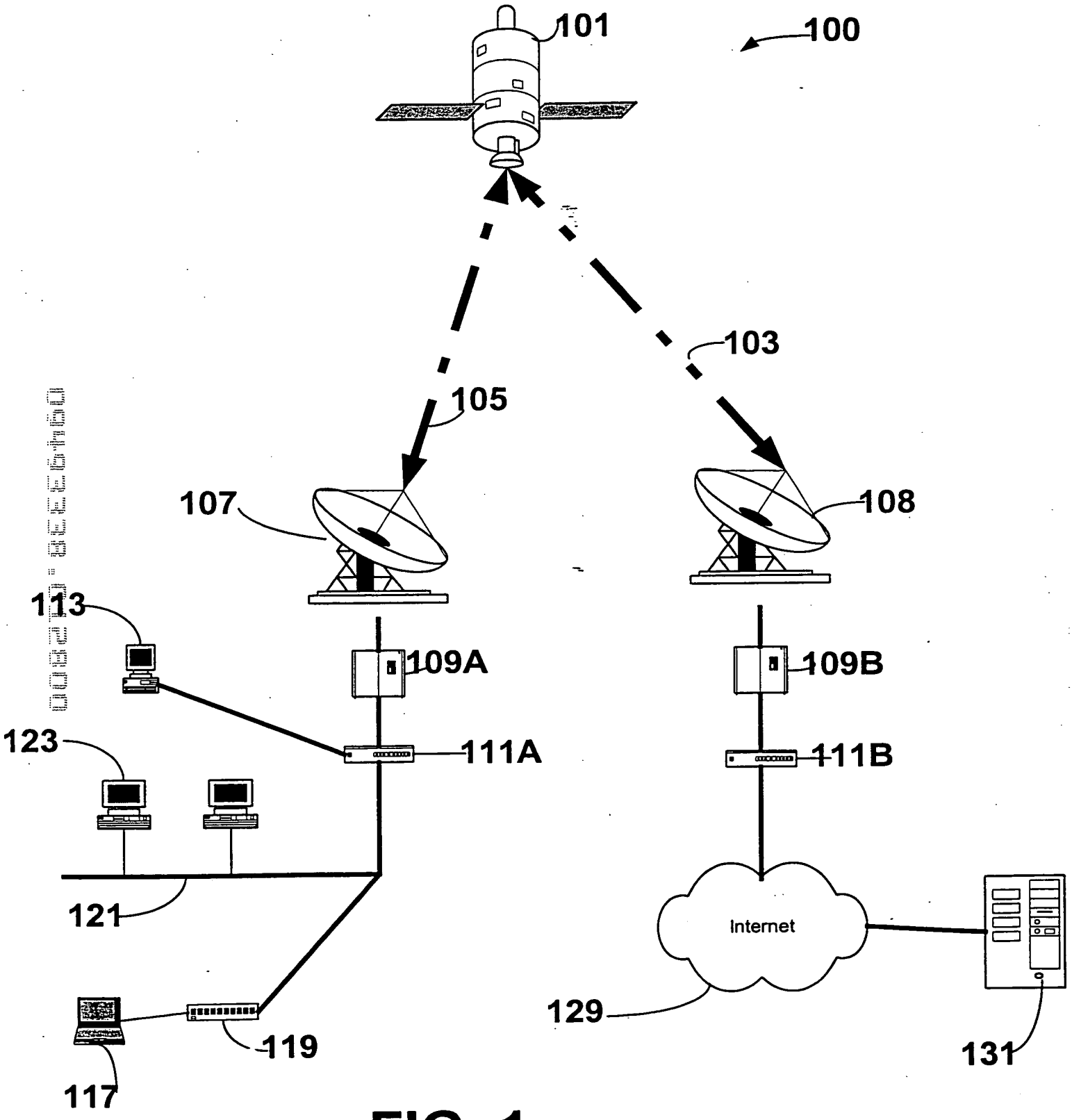

101
100
103
105
107
108
113
109A
109B
123
111A
111B
121
Internet
129
131
119
117

FIG. 1

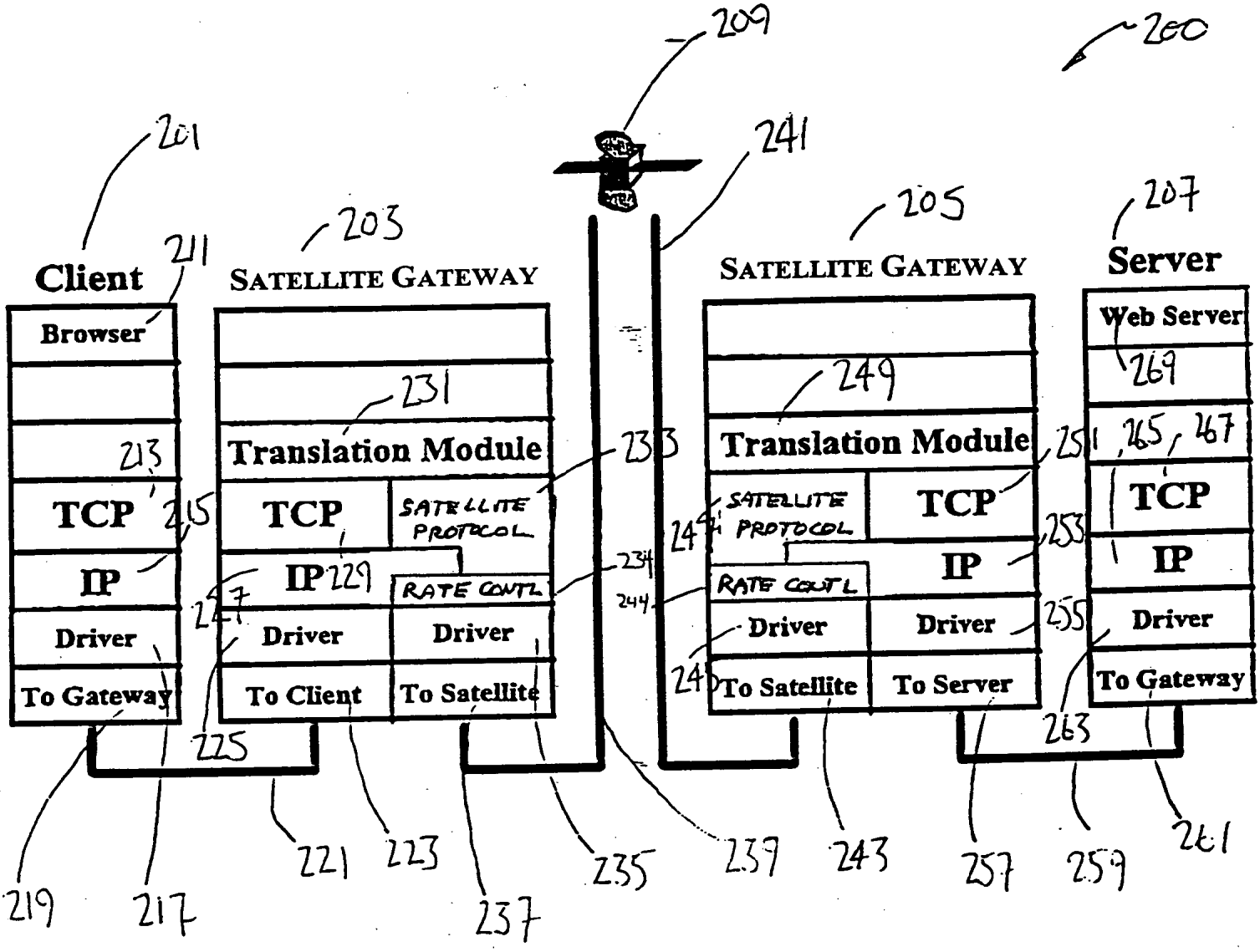

200
209
201
241
203
205
207
Client
211
SATELLITE GATEWAY
SATELLITE GATEWAY
Server
Browser
Web Server
269
231
213
Translation Module
233
249
Translation Module
251
265
267
TCP
215
TCP
SATELLITE PROTOCOL
SATELLITE PROTOCOL
TCP
253
IP
229
IP
234
RATE CONTL
RATE CONTL
IP
247
244
Driver
Driver
Driver
Driver
Driver
255
To Gateway
To Client
To Satellite
To Satellite
To Server
To Gateway
225
263
219
217
221
223
237
235
239
243
257
259
261

FIG. 2

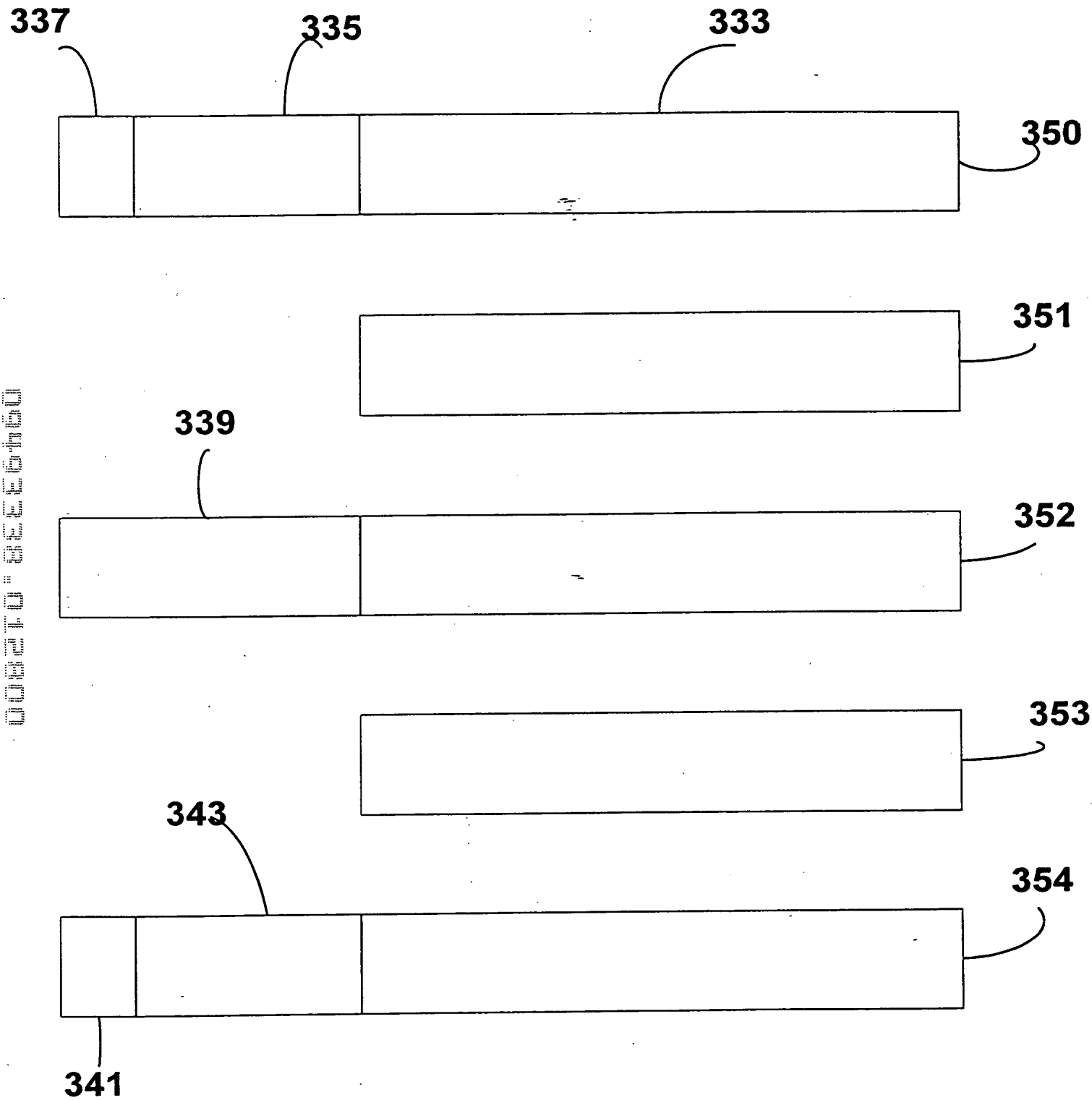


FIG. 2A

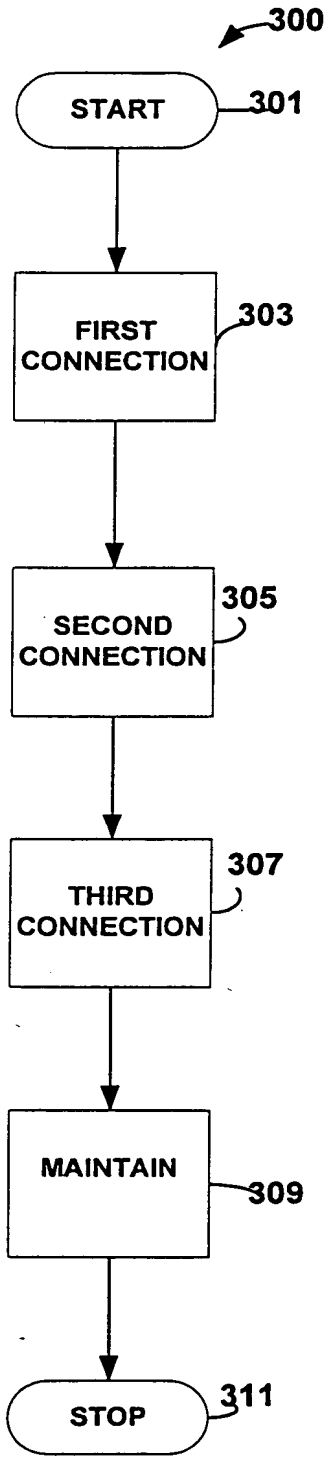

300
START
301
FIRST CONNECTION
303
SECOND CONNECTION
305
THIRD CONNECTION
307
MAINTAIN
309
STOP
311

FIG. 3A

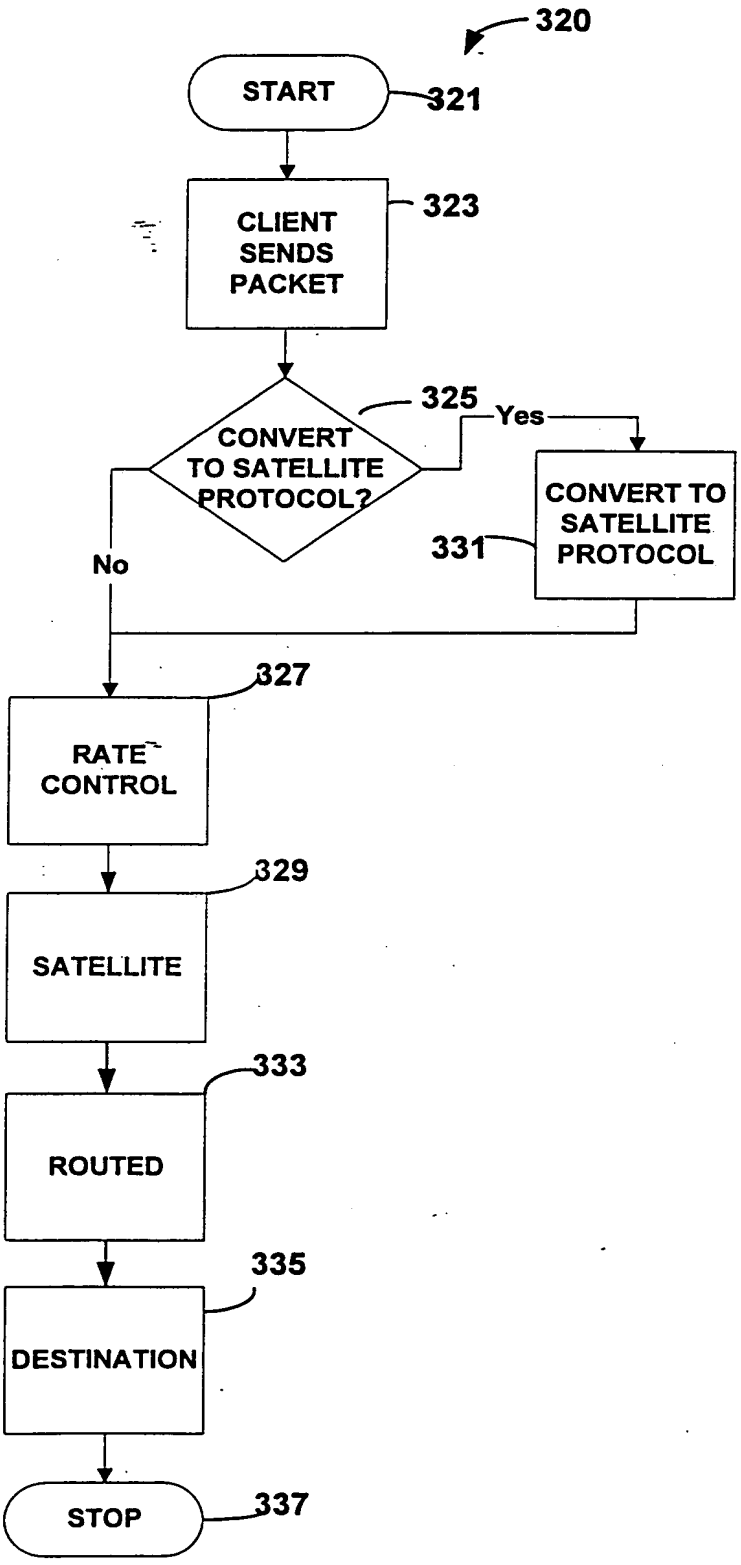

320
START
321
CLIENT SENDS PACKET
323
CONVERT TO SATELLITE PROTOCOL?
325
Yes
No
CONVERT TO SATELLITE PROTOCOL
331
RATE CONTROL
327
SATELLITE
329
ROUTED
333
DESTINATION
335
STOP
337

FIG. 3B

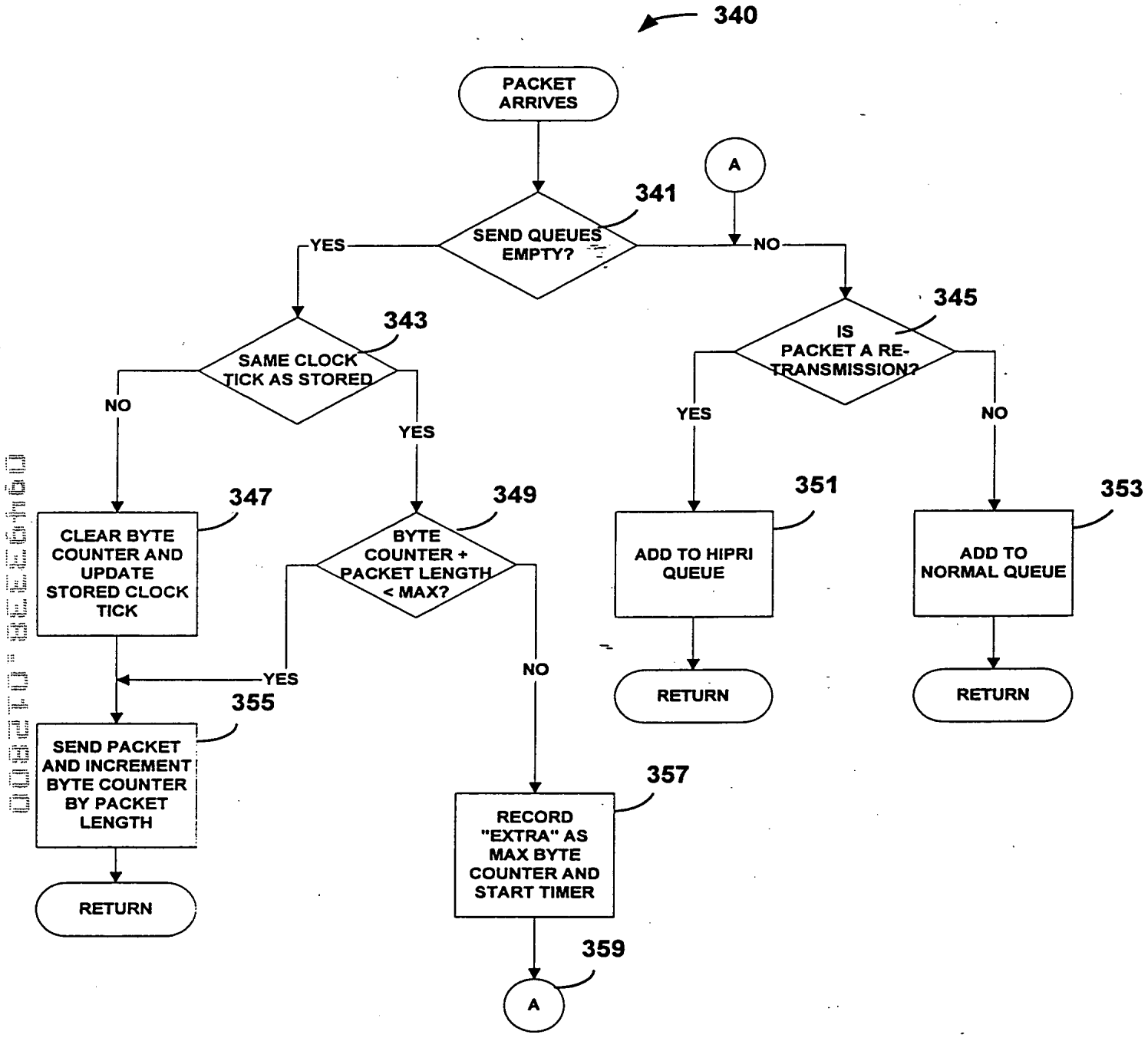

340
PACKET ARRIVES
A
341
SEND QUEUES EMPTY?
YES
NO
343
SAME CLOCK TICK AS STORED
NO
YES
345
IS PACKET A RE-TRANSMISSION?
YES
NO
347
CLEAR BYTE COUNTER AND UPDATE STORED CLOCK TICK
349
BYTE COUNTER + PACKET LENGTH < MAX?
351
ADD TO HIPRI QUEUE
353
ADD TO NORMAL QUEUE
YES
NO
355
SEND PACKET AND INCREMENT BYTE COUNTER BY PACKET LENGTH
357
RECORD "EXTRA" AS MAX BYTE COUNTER AND START TIMER
RETURN
RETURN
RETURN
359
A

Fig. 3C

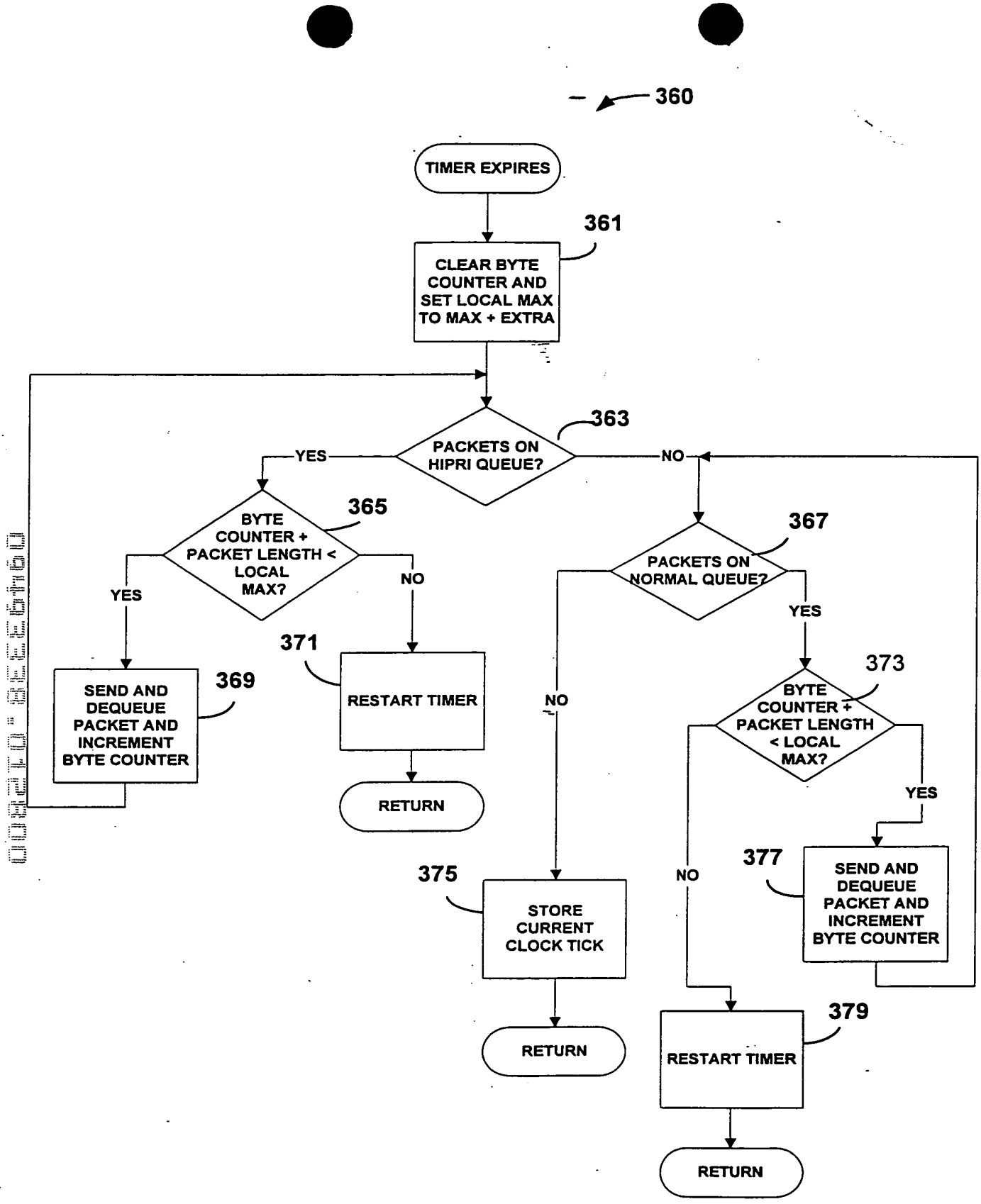

360
TIMER EXPIRES
361
CLEAR BYTE COUNTER AND SET LOCAL MAX TO MAX + EXTRA
363
PACKETS ON HIPRI QUEUE?
YES
NO
365
BYTE COUNTER + PACKET LENGTH < LOCAL MAX?
YES
NO
369
SEND AND DEQUEUE PACKET AND INCREMENT BYTE COUNTER
371
RESTART TIMER
RETURN
367
PACKETS ON NORMAL QUEUE?
YES
NO
373
BYTE COUNTER + PACKET LENGTH < LOCAL MAX?
YES
NO
377
SEND AND DEQUEUE PACKET AND INCREMENT BYTE COUNTER
375
STORE CURRENT CLOCK TICK
RETURN
379
RESTART TIMER
RETURN

Fig. 3D

00820 3EE66160

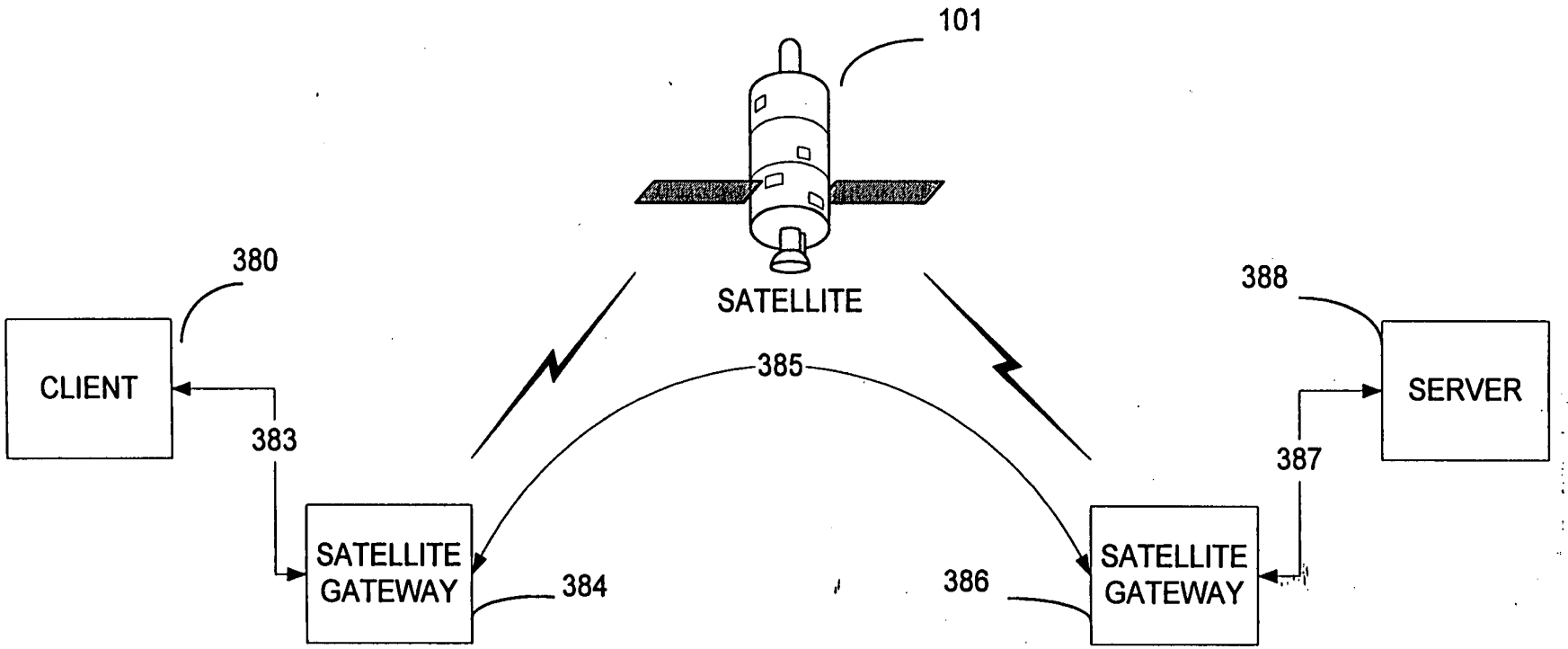
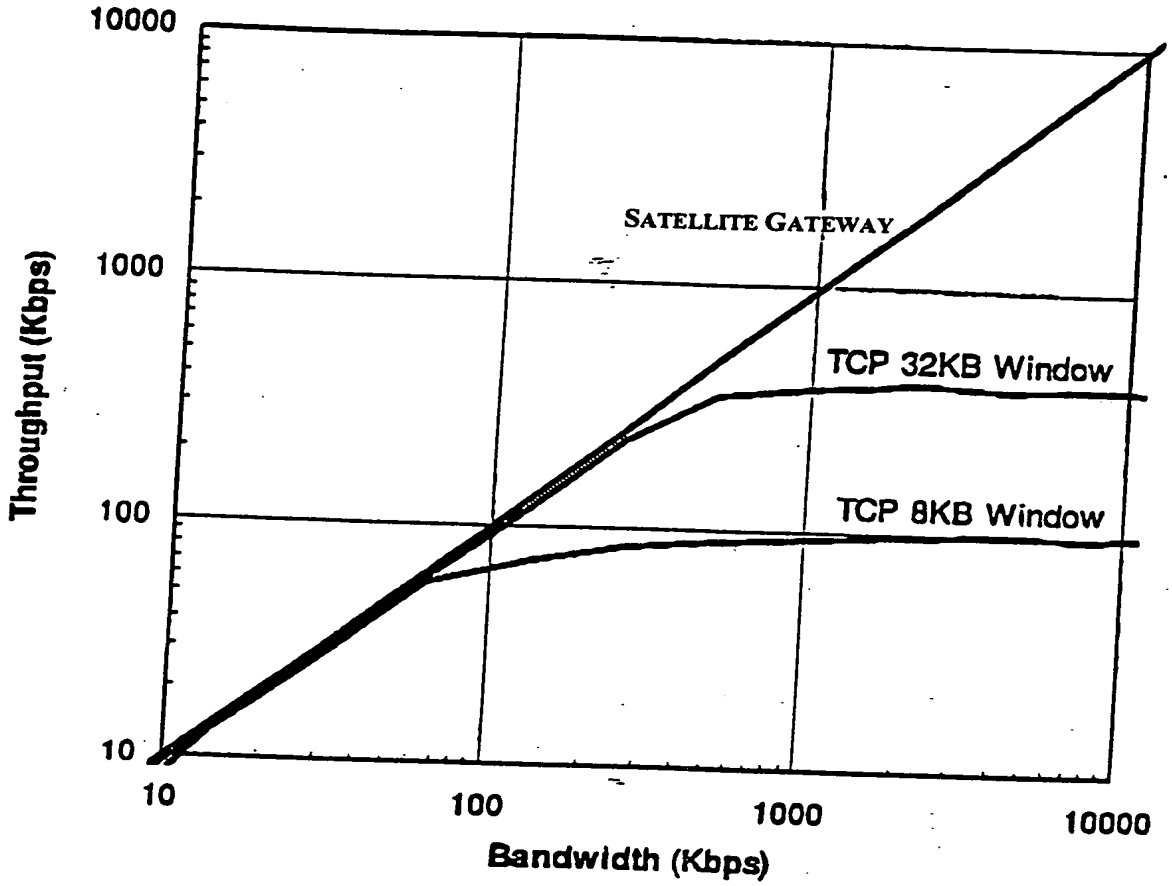


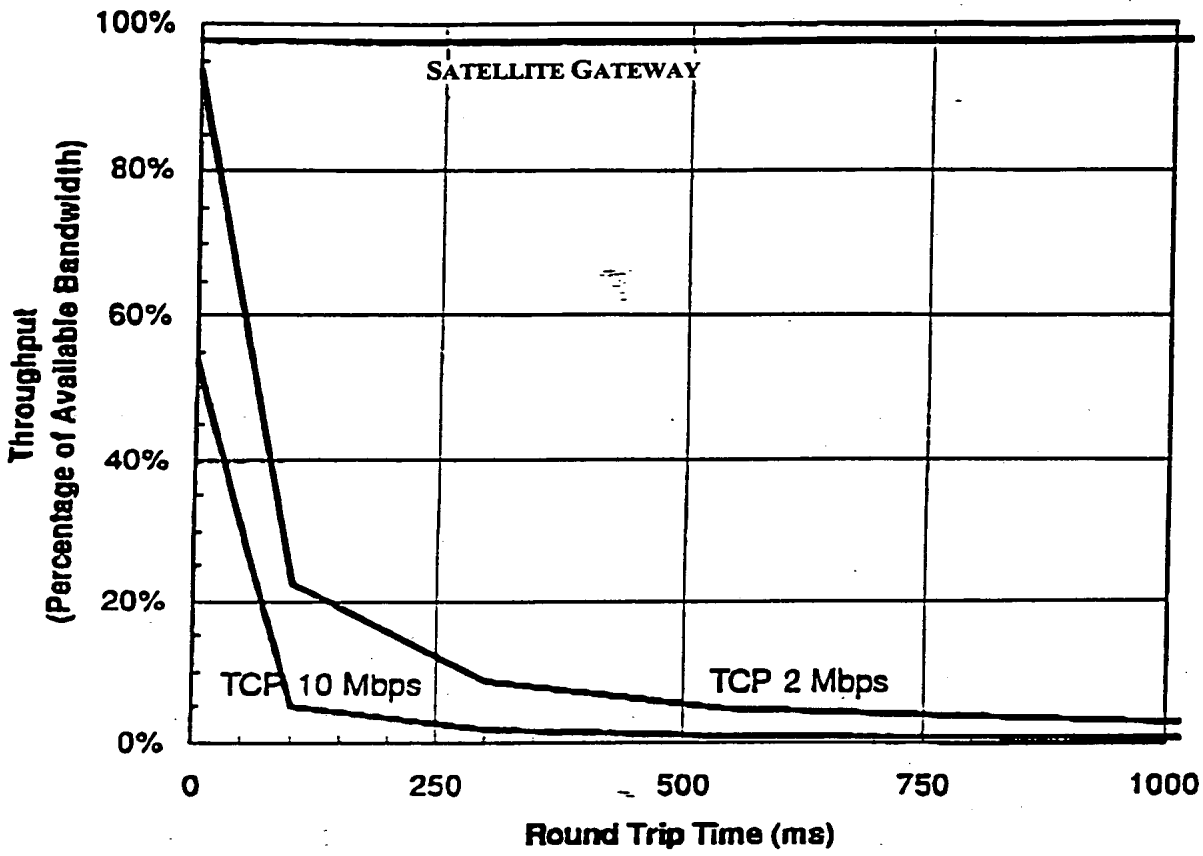
Fig. 3E

400



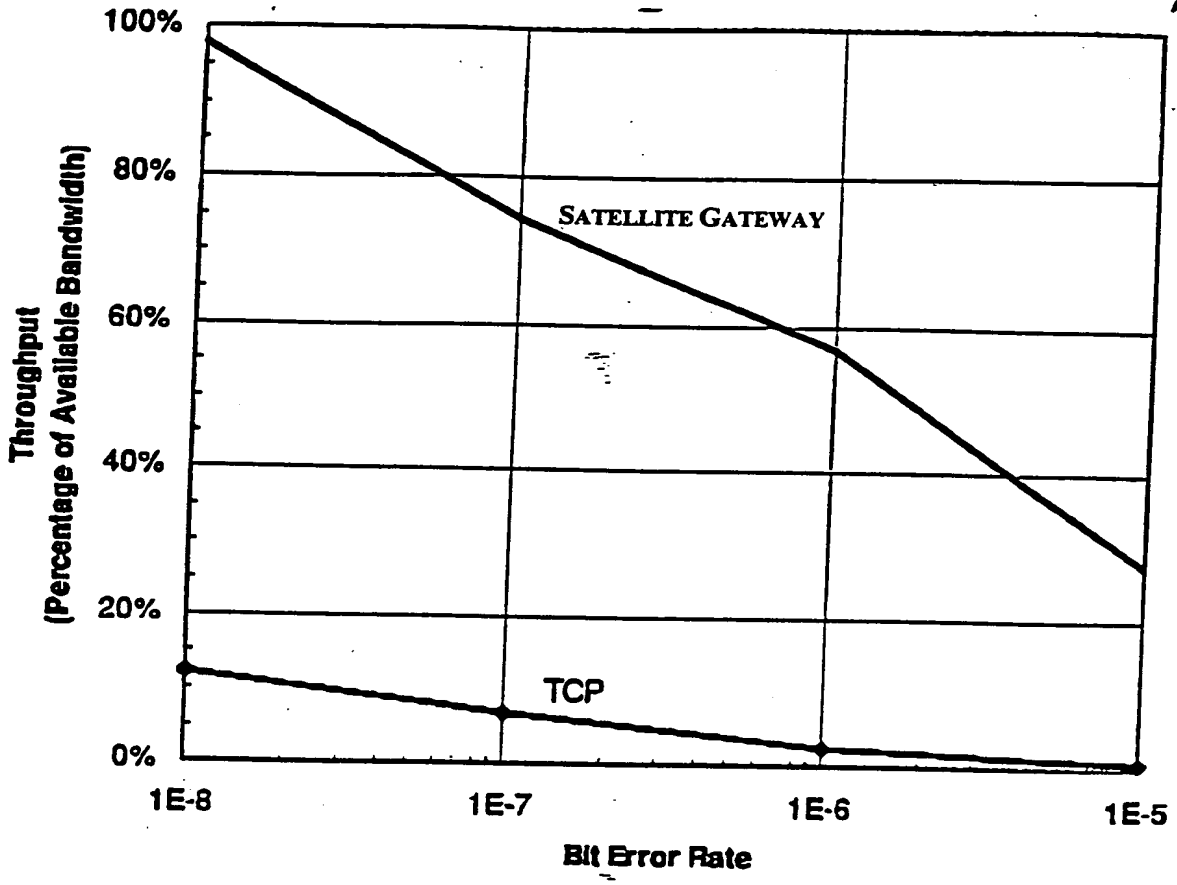
Window Size vs. Throughput

FIG. 4



Delay vs. Throughput

FIG. 5



Bit Error Rate vs. Throughput (10Mbps Link)

FIG. 6

0082F0 8EE6A6D

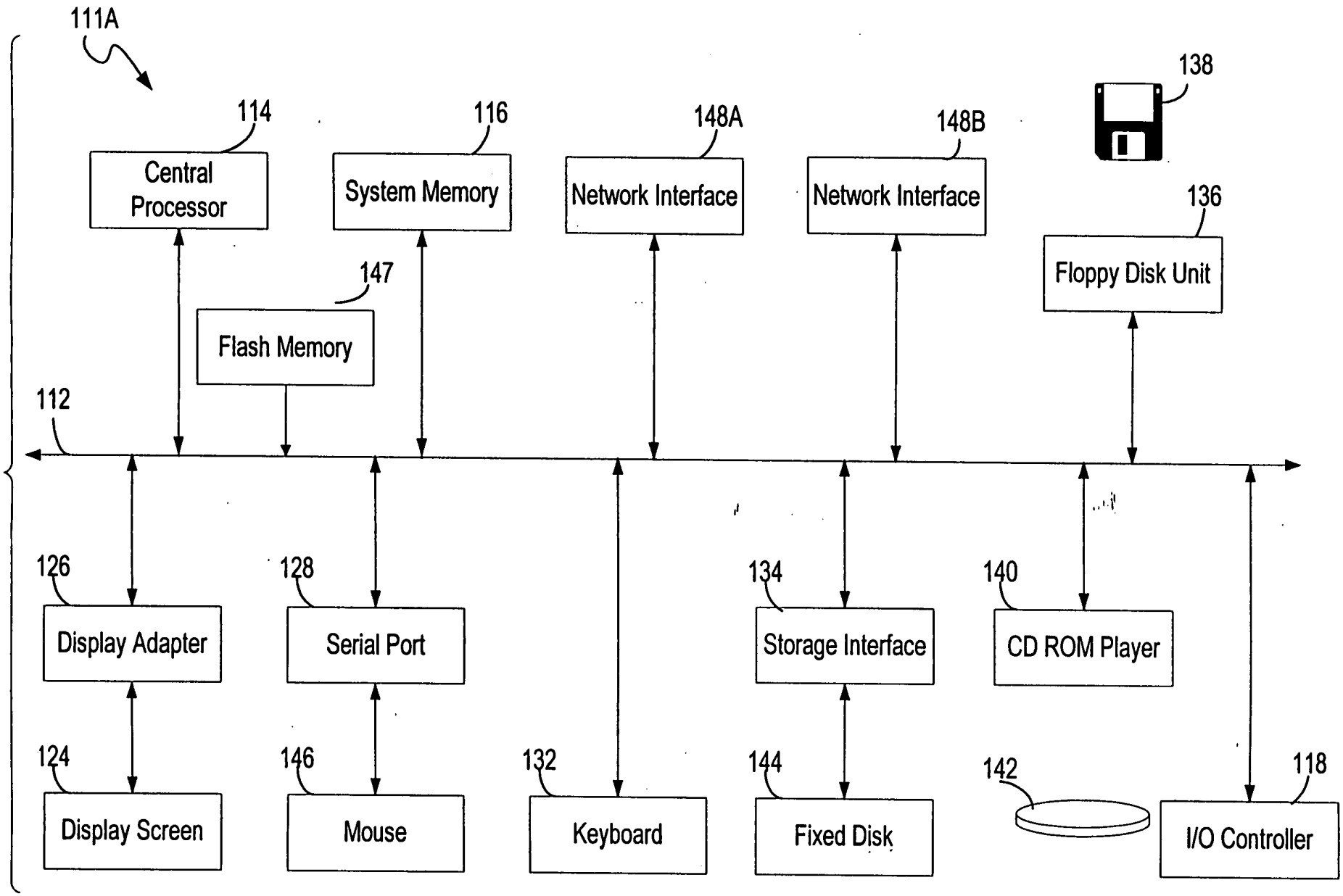


Fig. 7